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## Factors Influencing Accounting Information System Adoption in Small and Medium-Sized Enterprises: A Case Study of Northern Ghana

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### Abstract

Accounting Information Systems (AIS), a technology-based system, provide decision-makers with timely and reliable information. The study examines the factors influencing small and medium-sized enterprises (SMEs) AIS adoption in Northern Ghana, where little is known about it. Direct content analysis was used to collect data, and summative content analysis was used to generate research findings. The study concentrated on the factors that influence Small and Medium Scale Enterprises (SMEs) AIS adoption in Ghana. For the sake of credibility, data was collected from previous studies using prominent educational databases. Studies on AIS adoption in Ghana have revealed a lack of effectiveness. Rather of being integrated, adoption theories are either based on technology, organisations, and environment or based on humans, organisations, and technology; however, neither of these ideas integrates human, organisation, technology, and the environment. The study contributes to SMEs AIS adoption which is relatively new in Ghana. It also contributes to the sparse literature on SMEs' AIS adoption by employing four dimensions to widen knowledge.

### Introduction

Accounting information systems (AIS) have grown in importance as a result of globalisation and technological advancements (Ghaffar et al., 2019). AIS assists a company in collecting, storing, and processing accounting data (Quinn and Strauss, 2018). According to Tilahun (2019), it provides timely and accurate accounting-based information. Small and medium-sized enterprises (SMEs) which promote economic development, social harmony, job creation, and poverty alleviation account for 99% of all businesses worldwide. Ghana's SMEs have emerged as one of the country's development pillars. Their long-term survival and growth are critical to the economy (Nketsiah, 2018; Durst et al., 2018).

SMEs in Ghana are defined by a lack of finance, human resources, and management processes (Durst, *et al.*, 2018). SMEs are companies with poor bookkeeping, lack marketing techniques, knowledge, and management frameworks (Ndanyenbah and Zakaria, 2019). Ghanaian SMEs can be classified both qualitatively and quantitatively. This includes everything from multitasking to specialists, while quantitative criteria include annual turnover, total employee counts, and net worth (Durst, *et al.*, 2018). Keeping accurate financial records is one of the many challenges that SMEs face. Good AIS will boost business performance, particularly for SMEs (Durst, *et al.*, 2018). The SMEs sector continues to lag in financial record-keeping (Ndanyenbah and Zakaria, 2019). Keeping accurate financial records is a challenge for SMEs. Ghanaian SMEs are not immune to poor financial management (Forte and Moreira, 2018).

Approximately 60% of SMEs fail within the first year (Musah, 2017). Inadequate bookkeeping and accounting practises are a major cause of the failure of SMEs (Ndanyenbah and Zakaria, 2019). The low adoption rate of AIS has a negative impact on the contribution of SMEs to Ghana's economy (Musah, 2017). It is critical for SMEs to effectively deploy AIS (Ghaffar, *et al.*, 2019). Previous research tended to overlook SMEs. However, there has been little research on the system's use by SMEs in Ghana. In Ghana, academic works have been anti-SMEs. Several studies have been conducted to investigate the relationship between Manual Accounting Systems (MAS) and AIS (Opoku-Ware, 2015). These include the reasons why companies switch from MAS to AIS, as well as the factors that influence AIS and staff proficiency in proper financial reporting (Frimpong *et al.*, 2018; Mahama and Dahlan, 2020; Amoateng and Frimpong, 2017). The study's objective is to investigate the factors that influence SMEs' AIS adoption. HOTE is the result of integrating human, organisational, technological, and environmental aspects to bridge the knowledge gap.

## Literature Review

### 1. Small and Medium-Sized Enterprises

SMEs are generally defined by personnel count, investment, and sales volume. Ndesaulwa and Kikula (2016) state that SMEs vary per country. Several research on SMEs have been conducted for years, yet their definition and investigation remain inconsistent (Durst, *et al.*, 2018). SMEs are habitually defined by their deficiency of lack finance, human resources, managerial frameworks, and global market access. Some workable concepts for quantitative metrics focus on annual turnover by country. Tables 1 and 2 show how the EU's definition of a SME differs from North America's. A Chinese SMEs' are divided into principal business and activity.

Table 1: SMEs Subclasses of EU

	Subclass	Number of Employees	Annual turnover (million Euro)	Balance sheet total (million Euro)
firm	Micro	<10	≤2	≤2
firm	Small	<50	≤10	≤10
firm	Medium	<250	≤50	≤43

Source: Durst, Temel and Ferenhof (2018)

Table 1 shows the EU's definition of SMEs, which are classified into subclasses based on the number of employees, annual revenue, and balance sheet total.

Table 2: SME Meaning in North America

Subclass	Number of Employees
Micro firm	0 – 20
Small firm	20 – 100
Medium firm	100 -500

Source: Durst, et al (2018)

Table 2 depicts the definition of a SME in North America based on the number of employees. Academics and practitioners globally disagree on what constitutes a SMEs. Large-scale businesses employ at least 100 people, while small, medium and micro-sized businesses employ 6–30, 31–100, and 1–5 workers, correspondingly (Ghana Statistical Service (GSS), 2015). Employer-based AGI subcategorization The Ghanaian government defines SMEs as firms with 99 or fewer (International Trade Centre, 2016).

SMEs account for 99% of all businesses worldwide (Durst, *et al.*, 2018). SMEs drive Gross Domestic Product (GDP) growth, social cohesion, and income generation (Nketsiah, 2018). Using an AIS can help a corporation gather, store, and process accounting data (Quinn and Strauss, 2018). Employee attitudes and information communication technology (ICT) skills are critical to successful AIS adoption (Awiagah, Kang and Lim, 2016). It will help the firm function better (Ghaffar, *et al.*, 2019). The trustworthiness of a company's financial data helps eliminate financial record system issues (Chit, 2019). In Ghana, 85% of businesses are SMEs (International Trade Centre, 2016). Amoah and Amoah (2018) believe SMEs provide jobs and fuel economic progress in Ghana. In Ghana, SMEs create more jobs than larger corporations. Approximately 86% of SMEs' work is temporary, compared to 81% of permanent employment. The Ghanaian government has put in place schemes to help SMEs, either on its own or with the help of donor agencies. The sector is still underserved in comparison to large-scale enterprises (Musah, 2017).

Yussif, Kusi and Ismail (2019) claim that SMEs are crucial development engines in Ghana. In practise, SMEs lack AIS for estimating productivity and investment performance (Ndanyenbah and Zakaria, 2019). In Ghana, approximately 45% of SMEs utilise AIS, 34% use MAS, and 21% use both. This is inadequate for SMEs and the Ghanaian economy. Others still utilise notebooks and scrap of paper. Because most SMEs are unaware of AIS, they fail to keep correct books of accounts (Mahama and Dahlan, 2020).

## 2. SMEs' AIS Adoption in Ghana

SME efficiency does not necessitate a large number of variables. Access to capital and government assistance is critical for SMEs. AIS has been attempted to be improved by both the public and private sectors. This will aid in improving sector performance (Opoku-Afryie, 2019). Ghanaian SMEs believe that adopting AIS will necessitate a significant upfront investment (Ocloo, Worwui-brown and Addai, 2018). The Ghanaian government has launched initiatives to help SMEs, either on its own or with the help of donors. Examples include the Business Assistance Fund and the Youth Enterprise Support (YES) programme (Musah, 2017).

Currently, the majority of Ghanaian SMEs use AIS to generate periodic reports. AIS activities in SMEs are governed solely by financial accounting rules and Generally Accepted Accounting Principles (GAAP) compliance, rather than International Financial Reporting Standards (IFRS). Ghana adopted the IFRS in 2009, with implementation scheduled for 2012. SME IFRS is not used by the vast majority of SMEs (Musah et al., 2018). AIS is used by approximately 45% of registered SMEs in Ghana, while MAS and both MAS and AIS are used by 34% and 21%, respectively. Some entrepreneurs continue to keep track of their business transactions in notebooks and on scrap paper (Mahama and Dahlan, 2020).

Several barriers have slowed the adoption of AIS by SMEs in Ghana. Human, organisational, technological, and environmental factors are among them. Africa, particularly Sudan, continues to struggle with ICT adoption (Abdulle, Zainol and Ahmad, 2019). These difficulties can be human, organisational, technological, or environmental in nature (El-Dalabeeh, 2019). Most SMEs see IT as a cost rather than an advantage, and they may be hesitant to switch from manual to AIS. This is hampered by a lack of management support and financial resources for hardware, applications, and infrastructure (Darshi et al., 2020; Frimpong *et al.*, 2018; Mabula and Ping, 2018). The environment is the most pressing issue with AIS, as some SMEs are unable to use IT due to their location. Some SMEs consider AIS to be a waste of time and resources (Abayomi and Adegoke, 2016; Dawuda and Azeko, 2015). Decision making and financial planning are hampered by insufficient financial record keeping. Understanding the challenges of AIS design and adoption necessitates an understanding of training, investment, culture, and current business processes (Dawuda and Azeko, 2015; Kocsis, 2019).

### **Methodology**

This study investigated the availability of literature for Ghanaian SMEs. The study looked into the use of AIS by SMEs in Ghana. From 2015 to 2021, a total of 54 journal articles and conference proceedings were studied. The study used both direct and summative content analysis. The researcher discovered relevant material on the use of AIS by SMEs. SMEs AIS was investigated for content and contextual analysis. The study discovered a lack of AIS adoption among SMEs in Northern Ghana.

An online database search was used to find the factors. Other industries, such as companies/general business, government, and others, were added to the search. This was then divided into dimensional, factors. A preliminary study looked at the factors that influence SMEs' adoption of AIS in Northern Ghana. Tamale Metropolis SMEs were given 50 hard copy questionnaires, 45 of which were returned. The questionnaire included twenty (20) factors influencing SMEs' adoption of AIS. Purposive or judgmental sampling was used to select SMEs that could provide critical information that not all SMEs could provide. Finally, the study chooses to investigate the influencing factors in the dimensions of human, organization, technology, and environment that affect SMEs' AIS adoption, with at least 60% of respondents strongly agreeing or agreeing. This is shown in Table 4.

### **Results**

The study aims to fill a knowledge gap about AIS adoption in SMEs. An examination of 54 journal and conference papers published between 2015 and 2021 reveals a gap in Northern Ghana SMEs' adoption of AIS. These are depicted in tables and figures below.

Table 3: All Studies by Continent

Continent	No.	Percent
Africa	23	42.59
Asia	18	33.33
Middle East	7	12.96
Europe	2	3.70
America	1	1.85
No Continent	3	5.56
<b>Totals</b>	<b>54</b>	<b>100.00</b>

Table 3 summarizes all previous studies that were reviewed on the factors influencing SMEs' AIS adoption by continent. About 42.6%, 33.3%, 13%, 3.7%, and 1.9% of these studies, in that order, focused on Africa, Asia, the Middle East, Europe, and America. Approximately 5.6% of these studies lacked a geographic focus. This is shown in Table 3.

Pie Chart of All Studies by Sectors

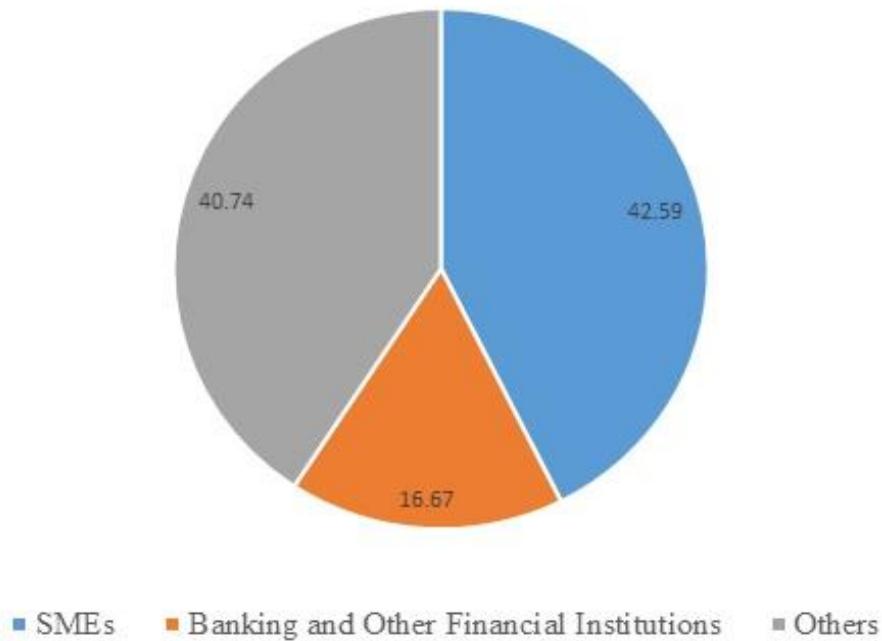


Figure 1: All Studies by Sectors

Despite the search's focus on SMEs, only 42.6% of these studies focused on SMEs, while 16.7% focused on banks and 40.7% focused on other financial institutions.

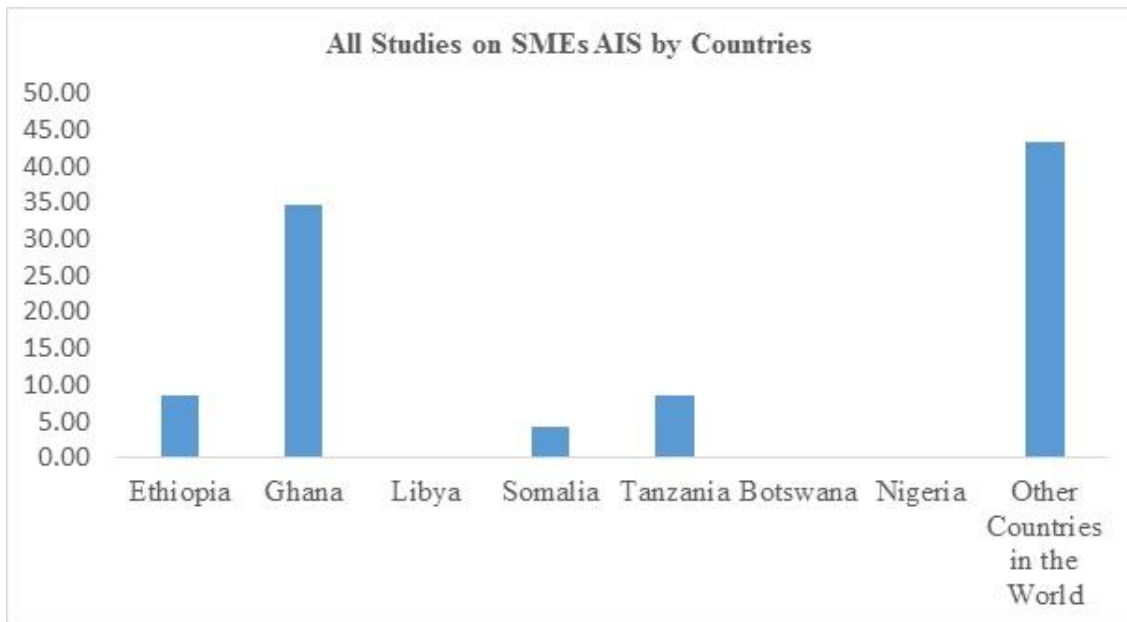


Figure 2: All Studies on SMEs AIS by Countries

According to nation studies, the initial focus was on Ghana, but due to a lack of data, the focus has shifted to the rest of the world. Approximately 37% of the study's focus is on Ghana, while the remaining 73% is on the rest of the world.

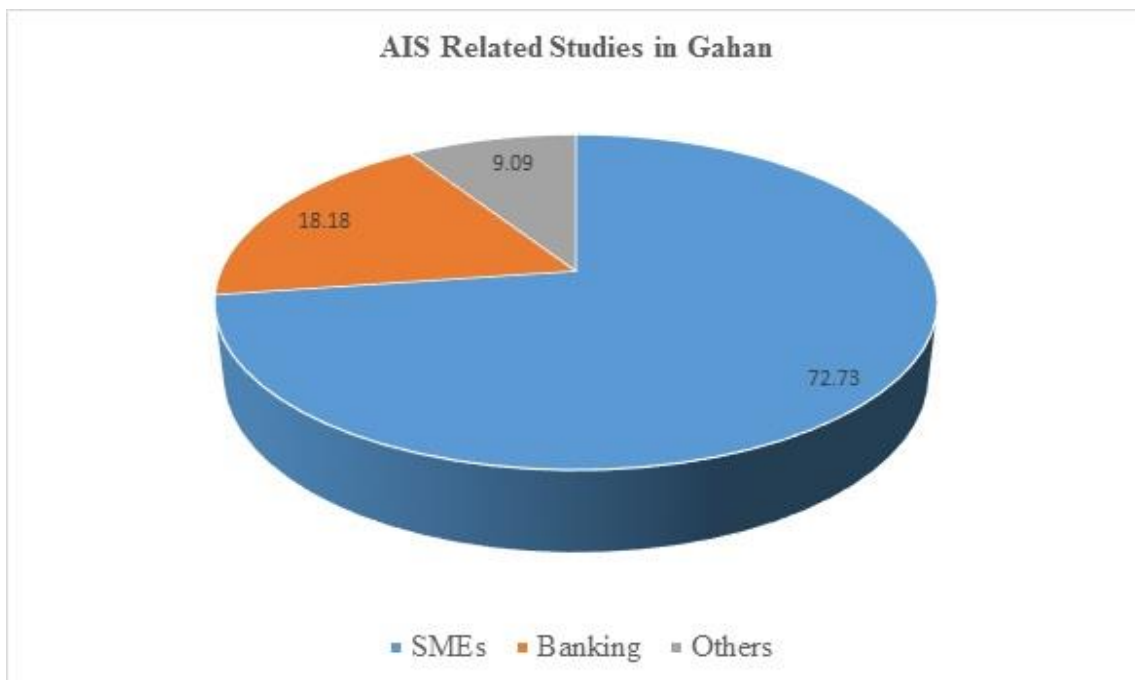


Figure 3: AIS Related Studies in Ghana

Approximately 73%, 18%, and 9% of 11 AIS-related studies on Ghana are focused on SMEs, banking, and other sectors, in that order. Figures 3 above shows it.

Table 4: Selection of Factors Influencing AIS Adoption

Factor	Percentage Sum of Strongly Agreed and Agreed	Percentage Sum of Neutral, Disagreed and Strongly Disagreed
IT Officers Innovativeness	83.8	16.2
IT Staff Capability	73.5	26.5
Firm Size	69.2	30.8
Scope	64.1	35.9
Management Support	91.8	8.2
IT Infrastructure	72.8	27.2
Software Type	76.2	23.8
Government Support	72.5	27.5
Competitive Pressure	72.5	27.5
Easy Access	64.4	35.6
Competency Knowledge Employee	73.9	26.1
Organizational Readiness	79.8	20.3
Data Type	66.7	33.3
Perceived Usefulness	69.2	30.8
Management IT Knowledge	67.5	32.5
Management Accounting Knowledge	69.7	30.3
Perceived Benefits for Better Decision	66	34
Perceived Ease of Use	59.5	45.6
User Friendliness	69.8	30.3
Financial Readiness	76.7	23.3

Source: Field Survey 2020

Table 4 summarizes preliminary research findings that were used to identify the factors influencing AIS adoption for study selection. The percentage sum of factors influencing SMEs AIS adoption on which respondents strongly agreed or agreed in a survey was all greater than 50%. However, of the twenty (20) factors studied, 50% had a percentage sum of strongly agreed and agreed above 70%, while the remainder had a percentage sum of strongly agreed and agreed ranging from 60% to 69%. Hence, the factors with percentage sum of strongly agreed and agreed above 70% were selected.

### Factors Influencing the Adoption of AIS

The literature review will provide a comprehensive picture of the subject. The introduction summarised and expanded on the study's overall focus on SMEs, SMEs in Ghana, and AIS. This section examines relevant literature to identify factors influencing SMEs' adoption of AIS. The results will present a comprehensive data set from the SMEs AIS review. The goal of this study



is to review relevant literature and identify factors influencing AIS adoption. African SMEs, particularly in Ghana, are affected by the digital divide. Factors that are overlooked in Europe or Asia may be critical in Africa for SMEs to adopt AIS. The HOTE's dimensions were mapped utilising literature data categorizes factors into dimensions. Human, organisational, technical, and environmental.

### **Human Factors**

People's use of technology has a significant impact on a company's overall competitiveness. One of the human variables influencing AIS adoption is inventiveness. The term "human factors" refers to current resource utilization abilities and human assets (Dondjio and Haafst, 2017). Employees who can come up with new ideas and think for themselves are more likely to adopt new technology. The emphasis of research is shifting to SMEs (Brem, Tidd and Daim, 2019). Horizontal and vertical innovations may coexist over time. Personnel who are innovative make a significant difference in the business, especially in mature monopolized markets (Bloch, 2018; Stoneman, 2018; Swann, 2017). IT-savvy employees are widely acknowledged to be critical to an organization's adoption of IT adoptions (Alam, Masum, Beh and Hong, 2016). Human characteristics such as IT know-how provide SMEs with a competitive advantage and influence in AIS adoption. The impact of technological change on job security and unemployment has revealed that those lacking in IT skills are more likely to oppose the adoption of ITs (Sallehudin, Mohd Satar, Abu Bakar, Baker, Yahya and Md Fadzil, 2019). Companies must have competency expertise in order to be competitive and appealing. A manageable system will be implemented by businesses (Dondjio and Haafst, 2017).

Three human dimension constructs influencing SMEs' AIS adoption were identified: IT Officers Innovativeness (IOI), Staff IT Capability (SIC) and Competency Knowledge (CK). The ability of an IT officer to generate new ideas, think independently, be creative, and be dependable is referred to as IOI. The SIC denotes a worker's ability to use technology. Staff IT capability provides a competitive advantage to IT-savvy personnel. The ability of the SME to hire people with the necessary skills is critical to its adoption of AIS. The AIS Competency Knowledge (CK) level refers to the number of personnel who have the necessary knowledge and abilities.

### **Organizational Factors**

According to Darshi, *et al* (2020), organisational factors influence AIS adoption. If there is a solid administrative framework in place and a willingness to embrace new technology, management will grasp AIS. The AIS variables of management and structure have a significant impact on the usefulness of financial data. The quality of financial data has an impact on corporate decisions. Any improvement in the quality of information will increase its relevance. The influence on financial data has a significant impact on corporate decision-making (Elsharif, 2019). Most companies fail because of their management structure (Lihniash, Egdair and Ahmed, 2019). Organizational readiness is critical in convincing SMEs to adopt AIS (Ghaffar, *et al.*, 2019). Darshi, *et al* (2020) contend that SMEs can easily adopt new technologies if they are willing to pay the costs. For SMEs to adopt AIS, management commitment and acceptability are critical. SME's must be encouraged and willing to bear the costs.

The managerial structure (MS) and organisational readiness (OR) influence SME adoption of AIS. The MS of SMEs refers to how SMEs organise their management structure. OR refers to

the level of firm stakeholder commitment to IT adoption. Stakeholder involvement in AIS adoption has a positive relationship with AIS impact and encouraging SMEs to adopt it.

### **Technological Factors**

Ghanaian SMEs recognise the significance of IT infrastructure, accounting software, and IT compatibility. Small businesses with technical personnel are more likely to adopt AIS than those without (Awiagah & Lim, 2016). Accounting software has a number of advantages for businesses and the economy (Chong and Nizam, 2018). AIS is less expensive, faster, and stores more data in Ghana than MAS (Frimpong et al., 2018). AIS collects and records data on occurrences that may have an impact on businesses. IT infrastructure is the most important factor influencing technology adoption (Nguyen and Nguyen, 2020). It must be accessible 24 hours a day, seven days a week, and sufficiently fast. Businesses use AIS because it meets their requirements (Lutfi, Idris and Mohamad, 2016). In SMEs, the perceived usefulness (PU) and perceived ease of use (PEOU) of AIS applications improve (Min So and Jeong, 2018).

SMEs' adoption of AIS is determined by the IT infrastructure (II), software type (ST), and IT compatibility (IC). ST is an IT programme that allows accounting data to be stored and processed more quickly and efficiently. The availability of IT equipment, end-user access to IT infrastructure, and adequate IT infrastructure required by SMEs to support AIS adoption will all help to accelerate adoption. Many SMEs use AIS to track financial performance and handle data more quickly and efficiently. Accounting software must be compatible with II in order to function. This relates to the compatibility of the AIS software with existing IT infrastructure. High compatibility improves SMEs' perceived ease of use and usefulness.

### **Environmental Factors**

Local environmental factors influence the best international accounting standard (IAS) implementation process for a country. The significance of local environmental factors in IAS, particularly AIS adoption, cannot be overstated (Al-Nasrawia and Thabit, 2020). State funding, according to Awiagah et al (2016), had the greatest influence on the nature of actions and had a significant impact on perceived behavioural control. To increase the veracity of transactions, countries that adopt technology require appropriate regime rules and principles. The Ghanaian government's policies aided in increasing internet penetration, and the liberalisation of the ICT industry has resulted in an increase in the number of IT-related services.

AIS is a financial and non-financial data reporting standard. Its goal is to increase transparency and make it easier for businesses to track long-term progress. As a result, government support for AIS adoption is critical (Hazam et al., 2019). To ensure continuous service availability, SMEs will rely more on service providers. External pressure has a positive impact on SMEs' plans to implement AIS (Kumar, Samalia and Verma, 2017). Competitive pressure influences SMEs' use of the AIS (Lutfi et al., 2016). Because of the intense competition in this competitive climate, companies are more likely to embrace innovation, according to (Sin, Osman, Salahuddin, Abdullah, Lim and Sim, 2016). Due to competitive pressure, entrepreneurs are compelled to establish a profitable market. SMEs become more creative in order to differentiate themselves from their competitors (Ismail, 2015).

Two factors influence a company's IT adoption among others are: government support (GS) and competitive pressure (CP). GS refers to government policies and regulations that help businesses operate more efficiently. It is believed that government assistance, the development of AIS structures, and government intervention in AIS adoption will assist SMEs in adopting AIS. GS on SMEs refers to appropriate government policies and regulations that assist SMEs in operating more efficiently. The intensity of the competitive environment in the market in which SMEs operate is denoted by CP. SMEs CP refers to the competitive environment in the market in which SMEs operate.

### Findings

Previous research on the adoption of AIS in Ghana has focused on sectors other than SMEs. Despite the fact that AIS literature is available to SMEs in Africa, Asia, the Middle East, Europe, and America. Academic works embodied in existing literature focusing on Ghana have been skewed against SMEs adopting AIS. Examples of such studies include the relationship between the use of MAS and AIS, the profitability effects of AIS use, and the influence of using computers to keep bank accounting records. Included are the determinants of AIS and staff competency on accurate financial reporting in listed banks, the type of accounting system used, a comparison of MAS and AIS, and why businesses transition from MAS to AIS and the challenges associated with the transition.

Despite the fact that there is more empirical evidence in Africa, there hasn't been enough research done on the factors that influence adoption in Ghana. The few studies that looked at the factors influencing AIS adoption in Ghana favoured large corporations over small and medium-sized enterprises. Only a few of these studies focused on AIS adoption by SMEs. Those Ghana studies have been heavily influenced by financial institutions and general businesses in Ghana, leaving out other critical sectors such as the SMEs sector. Approximately 42.6%, 33.3%, 13%, 3.7%, 1.9%, and 5.6% of the fifty-four (54) related studies were focused on Africa, Asia, the Middle East, Europe, America, and the General (No Continent), respectively. Approximately 24% and 14.8% of the 54 primary literature articles on the adoption of SMEs AIS, respectively, focused on Africa and Ghana. Those Ghana studies are more focused on financial institutions and general business. However, because financial institutions in Ghana are frequently large, they cannot be used as case studies to demonstrate best practises.

One of the most specific issues with SMEs AIS adoption is that the adoption theories in the literature are either based on technology, organisation, and environment or on human, organisation, and technology but fail to integrate human, organisation, technology, and environmental factors. Studies on AIS adoption in Africa, specifically Ghana, have concentrated on factors influencing AIS adoption in the technological, organisational, and environmental dimensions, with no studies focusing on the human dimension. That is, only technology, organisational, and environmental dimensions of AIS adoption have been studied in this part of the world. By considering four dimensions concurrently, as depicted in the Human, Organizational, Technological, and Environmental (HOTE) conceptual framework as shown in figure 4, the knowledge domain will be bridged while also mitigating the problem of under-explored factors influencing SMEs AIS adoption. This will allow interaction between people and technology to achieve key performance variables.

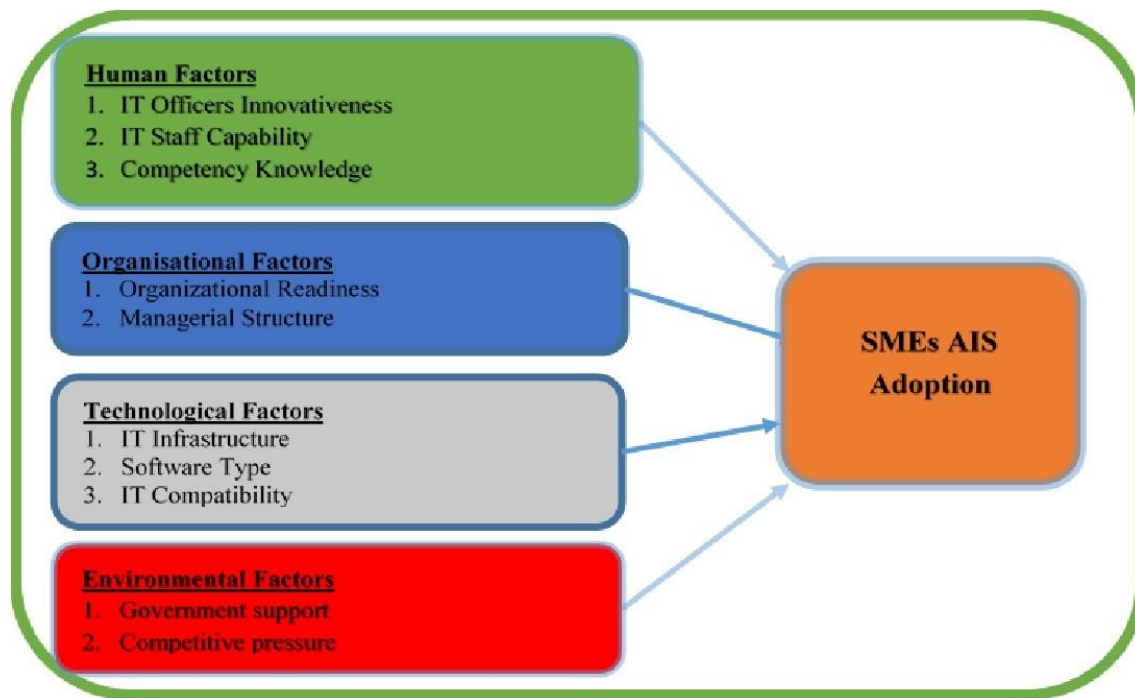


Figure 4: HOTE Conceptual Frame Work

### Conclusion

Upon the explosion of studies on factors influencing adoption of AIS, the inclusion of factors from all the four dimensions of human, technology, environment and organisational under one study is non-existence. These factors are related to IT officers' innovativeness, IT staff capability, IT staff competency knowledge, managerial structure, organizational readiness, IT infrastructure, software type, IT compatibility, Government support and competitive pressure. SMEs are the mainstay and the backbone of the Ghanaian economy, accounting for majority of the businesses. Poor AIS practices have been described as a sector misery. AIS has the potential to improve the way SMEs work both internally and externally. AIS helps to compile, store and process accounting information for a business. The review has demonstrated low acceptance rates for the execution of AIS. The lack of IT facilities, hardware, software, and IT infrastructure hampers the implementation of AIS in enterprises. Bad financial reports suggest that organizations are unable to perform financial analysis. The lack of qualifications and the high cost of employing professional workers make it very difficult for owners to do so. In the future, a study will be conducted to develop an AIS adoption model for SMEs based on identified factors, as well as to investigate the impact AIS adoption on SMES performance in Northern Ghana.

### Implication

This study is not necessary an issue about the availability of data on the chosen subject area of study but, most importantly, it will help the SME sector to fashion out efficient and effective financial record keeping system. The study also contributes to the adoption of AIS by SMEs, which is a relatively new idea in Ghana. Despite the fact that there is a vast body of literature on AIS adoption, most previous study has focused on larger enterprises, with only a few studies concentrating on SMEs, particularly in Ghana.

A further motivation for the study is the value of knowledge dissemination between researchers. The information given in the study will therefore be useful for researchers who may wish to carry out further research in the field of SMEs AIS adoption. Interestingly, no previous research has examined the four-dimensional SMEs AIS adoption by merging TOE and HOT-Fit, particularly in Ghana. The paper addresses a lack of research incorporating four dimensional factors influencing SMEs' adoption. A detailed technique is employed to identify factors that promote AIS adoption beyond Northern Ghanaian SMEs. The study adds to the body of knowledge on the subject by incorporating four dimensions in determining SMEs' adoption of AIS. It also contributes to closing a gap in the under-exploration and study of critical factors required for SME AIS adoption.

### Conflict of Interest

No potential conflict of interest was reported by the author(s)

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